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The Ohio State University Bulletin

VOLUME XXII

JUNE, 1918

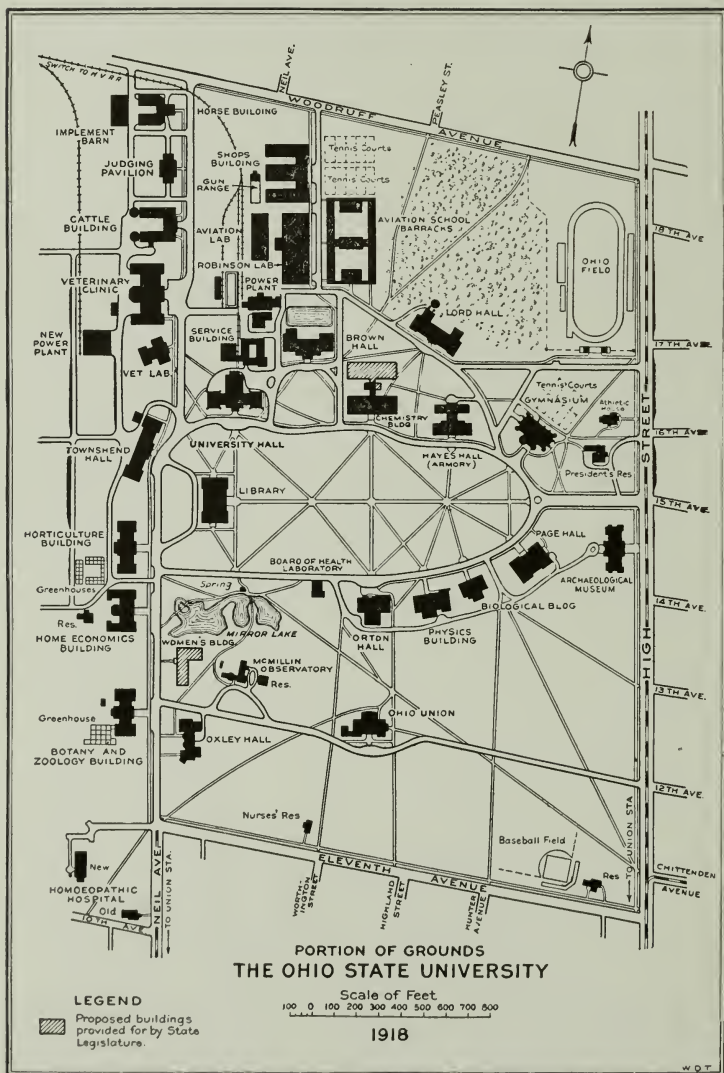
NUMBER 25

THREE-YEAR SHORT
COURSES IN AGRICULTURE
AND HORTICULTURE

OCTOBER 15 TO MARCH 21
1918-1919

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

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THE FRANKLIN CO. CHL.

JANUARY.							FEBRUARY.							MARCH.							APRIL.						
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JANUARY.							FEBRUARY.							MARCH.							APRIL.						
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UNIVERSITY CALENDAR

1918

Entrance examinations, Tuesday to Saturday, June 25 to 29,
8 A. M.

Summer Session, Monday, June 24 to Friday, August 16.

Entrance examinations, Tuesday to Saturday, September 10 to
14, 8 A. M.

Registration Day—First Semester—Tuesday, September 17.

President's Annual Address, Wednesday, September 18, 11 A. M.

Latest date for registration of candidates for a degree at the
Commencement of June, 1919, October 1.

Registration Day, Short Courses in Agriculture—First Term—
Tuesday, October 15.

Mid-semester reports to the Deans concerning delinquent stu-
dents, Wednesday, November 20.

Thanksgiving recess begins November 27, 1 P. M., and ends
December 3, 8 A. M.

Christmas recess begins Friday, December 20, 6 P. M.

1919

Christmas recess ends Tuesday, January 7, 8 A. M.

Registration Day, Short Courses in Agriculture—Second Term—
Tuesday, January 7.

Final examinations, Wednesday, January 22 to Thursday, Jan-
uary 30.

First semester ends Thursday, January 30, 6 P. M.

Farmers' Week, Monday, January 27 to Friday, January 31.

Registration Day—Second Semester—Tuesday, February 4.

Washington's Birthday, Saturday, February 22.

Close of Second Term, Short Courses in Agriculture, Friday,
March 21.

Mid-semester reports to the Deans, Saturday, March 22.

Easter recess, Thursday noon, April 10 to Tuesday, April 15,
8 A. M.

Memorial Day, Friday, May 30.

Competitive Drill—Cadet Regiment—Saturday, May 31.

Final examinations, Wednesday, June 4 to Thursday, June 12.

Commencement, Tuesday, June 17.

Entrance examinations, Tuesday, June 24 to Saturday, June 28,
8 A. M.

Summer Session, Monday, June 23 to Friday, August 15.

THE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises eleven colleges and a graduate school:

College of Agriculture	College of Engineering
College of Arts, Philosophy and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
	College of Veterinary Medicine
	Graduate School

COLLEGE OF AGRICULTURE

The work in the College of Agriculture is arranged to meet the needs of four distinct groups of students:

FOUR-YEAR CURRICULA. The four-year curricula consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA. The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

WINTER COURSES. The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE. Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

These courses replace the two-year courses in Agriculture and Horticulture and provide very largely the same work except that they extend over three years of five months each instead of two years of nine months each and are given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over 17 years of age who have completed

the work of the eighth grade and have had one year of practical experience on the farm.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail a blank application for admission. Such applications should be filled out and sent to the Entrance Board previous to the opening of the term.

DATE OF OPENING

These courses will open this year on October 15 and will close March 21, 1919. A vacation will be given at the Holiday season.

GENERAL INFORMATION

FEES AND EXPENSES

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses. The expenses the next two years will be practically the same:

Incidental fee	\$ 20 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposit to cover laboratory material.....	20 00
Uniform	12 00
Books	12 00
Board (20 weeks at \$3.50 per week).....	70 00
Room rent (\$8.00 per month).....	40 00
Total	<u>\$180 00</u>

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from \$50.00 to \$75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about \$50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University farm, for which they are paid at the rate of 15 to 20 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. **The University does not guarantee or promise work to any one.** The matter of getting employment is left entirely to the student. One with initiative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State each year, and is good for three consecutive years in either the short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

AWARDING OF SCHOLARSHIPS

These scholarships are awarded by the Agricultural Commission as prizes in the Junior Contest work conducted by the Commission.

1—The scholarship in each county shall be awarded to the contestant who is eligible to admission to the Short Courses and stands highest in the contest in which there is the greatest number of entries. In other words, if there are wheat growing, apple growing, and corn growing contests, or any other contests conducted by the Commission, the winner of the first prize in the contest having the greatest number of participants shall be the recipient of the scholarship.

2—The recipient of the scholarship must be at least 17 years of age at the time of the beginning of the first term of school of the year in which the contest is held.

3—The scholarships are open to both sexes.

4—The scholarship must be used the first year it becomes available.

5—The scholarships are not transferable.

6—Should the recipient of the scholarship not desire the benefits of the same it will automatically revert to the next highest in the eligible list.

VALUE OF SCHOLARSHIP

The free scholarship will cover the registration fees. Its value will be \$20.00 per year, or \$60.00 for three years.

RULES GOVERNING SCHOLARSHIPS

All rules governing the awarding of free scholarships, as well as any change in the same, will be made by the State Agricultural Commission.

For further particulars address either the Ohio Agricultural Commission, Columbus, Ohio, or the Dean of the College of Agriculture, Ohio State University, Columbus, Ohio.

OUTLINE OF THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Agricultural Engineering	(51) 4	Dairying	(52) 3
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Horticulture	(53) 4	Horticulture	(54) 4
Soils	(53) 3	Soils	(54) 3
Dairying	(53) 3	Agricultural Engineering	(52) 4
Rural Economics	(51) 4	Animal Husbandry	(54) 4
Farm Crops	(51) 4	Farm Crops	(52) 4
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Farm Projects to be carried during the summer vacation.			

THIRD YEAR

Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent at the University.

OUTLINE OF THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4
Farm Projects to be carried during the summer vacation.			

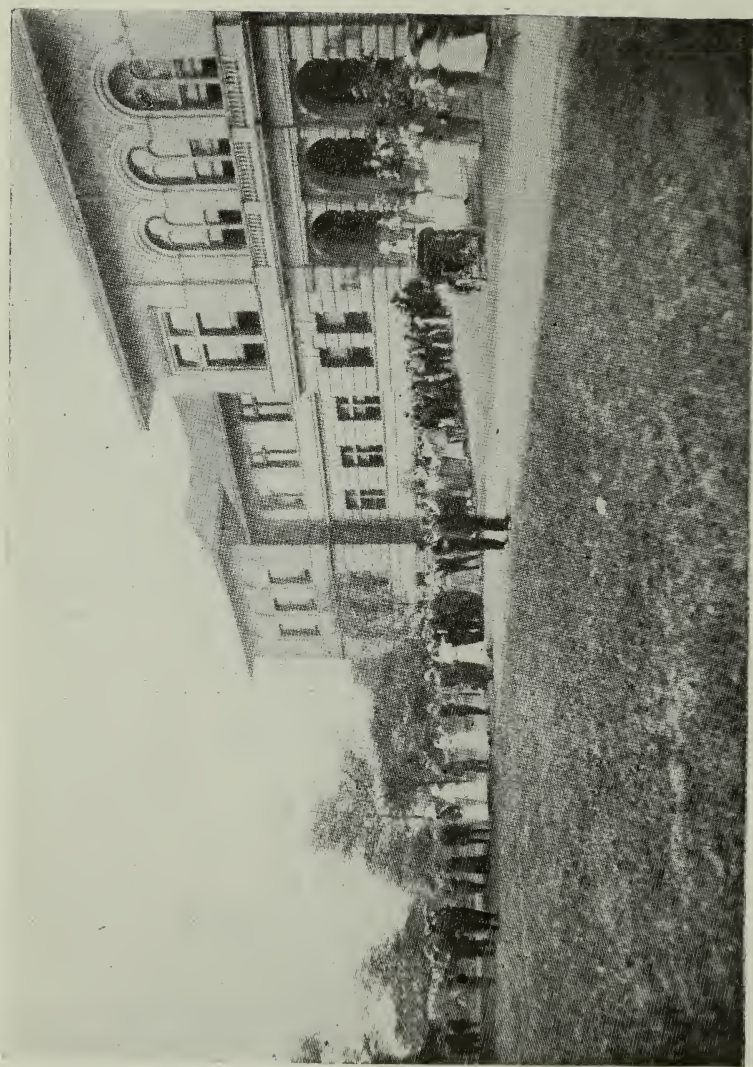
THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Horticulture	(67) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(65) 4	Horticulture	(64) 4
Dairying	(55) 3	Horticulture	(62) 4

STUDENTS WAITING TO REGISTER IN THE COLLEGE OF AGRICULTURE ON REGISTRATION DAY



DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

AGRICULTURAL CHEMISTRY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost of materials for buildings, paints and painting, and concrete work in its various applications to the farm. (4) Drainage is considered

from the field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; concrete and its uses; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, steam engines and windmills.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey, Mr. Stone.

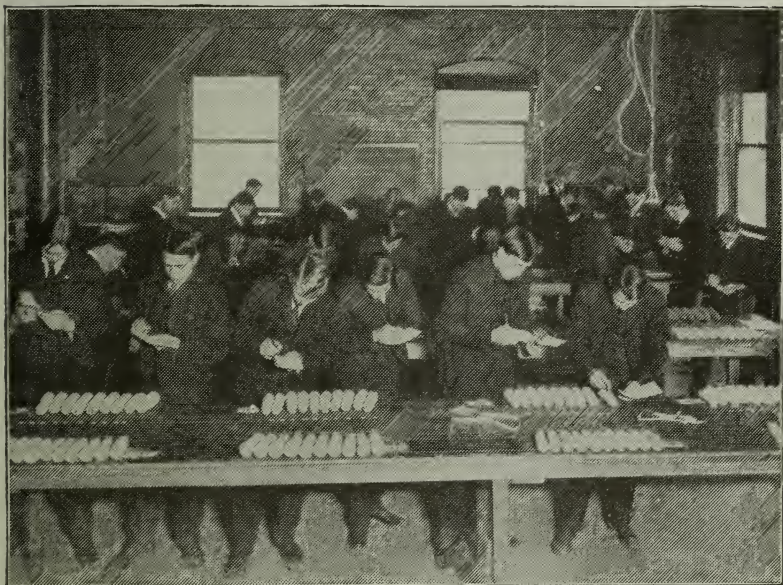
Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Salisbury.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Second term. Second year. Mr. Stone.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions.



CORN JUDGING

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

POULTRY HUSBANDRY

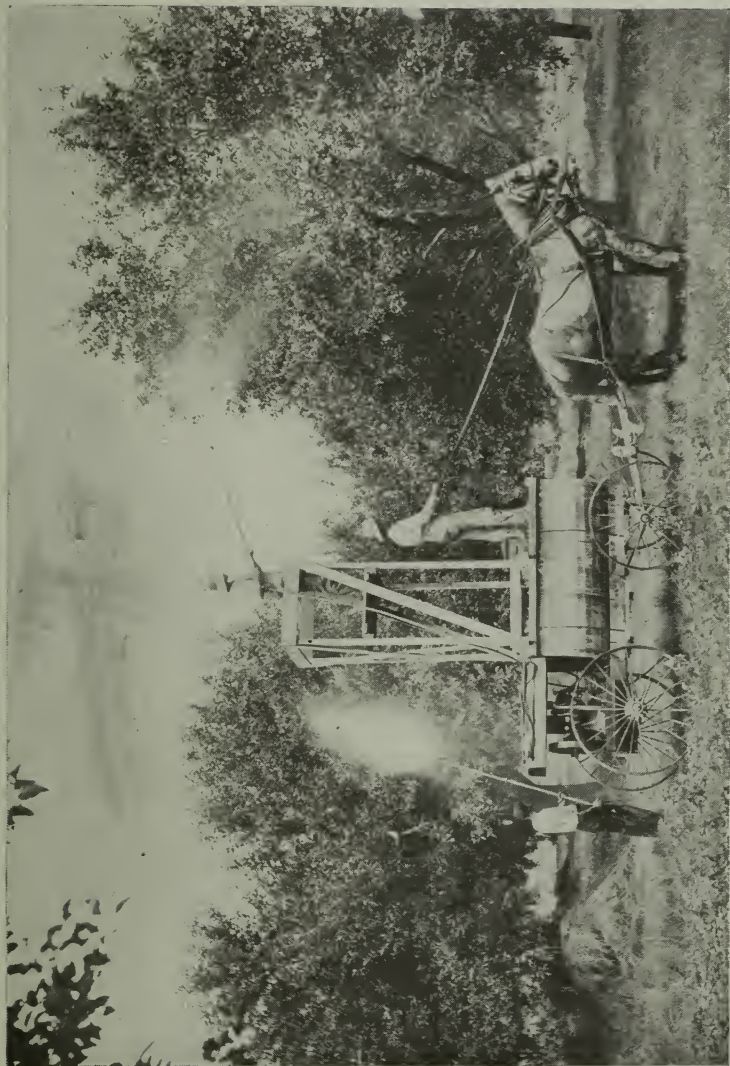
Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.



BIRD'S-EYE VIEW OF THE LIVE STOCK BUILDINGS



STUDENTS SPRAYING IN THE UNIVERSITY ORCHARD

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combating them.

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BOTANY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

DAIRYING

The Department of Dairying offers the following lines of work: selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, butter-making, cheese-making, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. First year, Three-Year Course in Agriculture.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skimmilk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.



THE CENTRAL PART OF THE CAMPUS

56. Farm Buttermaking. Three credit hours. Second term.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are included in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation. Mr. Dishong.

FARM CROPS

51-52. Crop Production. Four credit hours. The year. Mr. Schuer.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purposes.

HORTICULTURE

In this department, practical instruction is given in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orcharding; a thorough course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds.

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. **Pomology.** Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. **Pomology.** Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. **Landscape Gardening.** Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. **Vegetable Forcing.** Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.



A PRUNING CLASS

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, plotting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes such as windbrakes, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

MILITARY DRILL

In accordance with the Morrill Act of 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all students to drill two years unless excused by the Military and Gymnasium Board. This work is under two commissioned

officers of the regular army. The short course students are obliged to take military drill throughout the three years at the University.

PHYSICAL EDUCATION

Men

101-102. Physical Education. One credit hour. The year. Two hours each week during the first two years. Required of all students in this course. During the first year the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

RURAL ECONOMICS

The work in this department deals with the principles of accounting and their application to farm practices, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit; rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term.

Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the use of simple carpenter tools. In forging is taught the use and care of the forge, fire, and tools;



CORN FIELD

practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

VETERINARY MEDICINE

Courses are given in this department which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration, horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio live stock.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combating the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of the College. Each student's work will be supervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.

The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.

The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering troughs, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying out and Installing a Drainage System.

The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.

This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.

The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.

The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skimmilk.

2—Township Survey of Purebred Stock.

A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.

The keeping of records of the cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.

The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.

The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.

On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butter-fat Production.

Keeping a cost account of the milk and butter-fat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.

The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.

Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.

Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Butter-making at Home.

The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheesemaking.

Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.

Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.

Planting seeds of forest trees; noting their germination and measuring growth.

3—Survey of Woodlots.

Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.

Measuring diameter growth of trees to learn annual increase, and time when growth is most rapid.

5—Census of Woodlot.

Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.

Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.

The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.

2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased, inferior fruit and reduce clusters to one fruit. Second, same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from $\frac{1}{4}$ to $\frac{1}{2}$ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yield, maturity, disease, cost of production and net returns.

RURAL ECONOMICS

1—A System of Farm Cost Accounting and Records.

This project consists of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.

A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.

A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.

A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.

The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.

A study of the social and business relations of the residents of a rural community.

The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XXIII

MAY, 1919

NUMBER 29

THREE-YEAR SHORT COURSES IN AGRICULTURE AND HORTICULTURE

OCTOBER 14 TO MARCH 12
1919-1920

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

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UNIVERSITY CALENDAR

1919

Summer Session, Monday, June 23 to Friday, August 15.
Entrance examinations, Tuesday to Saturday, June 24 to 28,
8 A. M.
Entrance examinations, Tuesday to Saturday, September 9 to 13,
8 A. M.
Registration Day—First Semester—Tuesday, September 16.
President's Annual Address, Wednesday, September 17, 11 A. M.
Latest date for registration of candidates for a degree at the
Commencement in June 1920, October 1.
Registration Day, Short Courses in Agriculture—First Term—
Tuesday, October 14.
Mid-semester reports to the Deans concerning delinquent stu-
dents, Wednesday, November 19.
Thanksgiving recess begins November 26, 1 P. M., and ends
December 2, 8 A. M.
Christmas recess begins Friday, December 19, 6 P. M.

1920

Christmas recess ends Tuesday, January 6, 8 A. M.
Registration Day, Short Courses in Agriculture—Second Term—
Tuesday, January 6.
Final examinations, Wednesday, January 21 to Thursday, Jan-
uary 29.
Farmers' Week, Monday, January 26 to Friday, January 30.
First semester ends Thursday, January 29, 6 P. M.
Registration Day—Second Semester—Tuesday, February 3.
University Day, Saturday, February 21.
Close of Second Term, Short Courses in Agriculture, Friday,
March 12.
Mid-semester reports to the Deans, Saturday, March 21.
Easter recess, Thursday noon, April 1 to Tuesday, April 6,
8 A. M.
Competitive Drill—Cadet Regiment—Saturday, May 29.
Memorial Day, Sunday, May 30.
Final examinations, Wednesday, June 3 to Thursday, June 10.
Commencement, Tuesday, June 15.
Summer Session, Monday, June 21 to Friday, August 13.
Entrance examinations, Tuesday, June 22 to Saturday, June 26,
8 A. M.

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises eleven colleges and a graduate school:

College of Agriculture	College of Engineering
College of Arts, Philosophy and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
	College of Veterinary Medicine
	Graduate School

COLLEGE OF AGRICULTURE

The work in the College of Agriculture is arranged to meet the needs of four distinct groups of students:

FOUR-YEAR CURRICULA. The four-year curricula consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA. The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

WINTER COURSES. The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE. Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

These courses replace the two-year courses in Agriculture and Horticulture and provide very largely the same work except that they extend over three years of five months each instead of two years of nine months each and are given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over 17 years of age who have completed

the work of the eighth grade and have had one year of practical experience on the farm.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail a blank application for admission. Such applications should be filled out and sent to the Entrance Board previous to the opening of the term.

DATE OF OPENING

These courses will open this year on October 14 and will close March 12, 1920. A vacation will be given at the Holiday season.

GENERAL INFORMATION

FEES AND EXPENSES

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses. The expenses the next two years will be practically the same:

Incidental fee	\$ 20 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposit to cover laboratory material.....	20 00
Uniform, Shirt and Gloves	15 00
Books	12 00
Board (20 weeks at \$4.50 per week).....	90 00
Room rent (\$10.00 per month)	50 00
Total	\$213 00

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from \$50.00 to \$75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about \$50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University farm, for which they are paid at the rate of 30 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. **The University does not guarantee or promise work to any one.** The matter of getting employment is left entirely to the student. One with initiative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State each year, and is good for three consecutive years in either the short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

AWARDING OF SCHOLARSHIPS

These scholarships are awarded by the Farm Bureau in each county. The Farm Bureau is guided in its selection by the following regulations:

1. The scholarship in each county shall be given to a person who is eligible to admission to the Short Course in Agriculture or Horticulture of the College of Agriculture.
2. The scholarship shall only be given to those persons who have not had the educational advantages of a first or second grade high school.

3. The recipient must have lived at least one year on the farm before the scholarship can be received.

4. The recipient must be at least 17 years of age at the time of the beginning of the first term of the Short Course in Agriculture.

5. The scholarship must be used the first year it becomes available.

6. The scholarships are open to both sexes.

7. The scholarships are not transferable.

VALUE OF SCHOLARSHIP

The free scholarship will cover the registration fees. Its value will be \$20.00 per year, or \$60.00 for three years.

RULES GOVERNING SCHOLARSHIPS

All rules governing the awarding of free scholarships as well as any changes in the same, will be made by the Farm Bureaus acting with the College of Agriculture.

For further particulars address either the President of the Farm Bureau in your county or the Dean of the College of Agriculture, Ohio State University, Columbus, Ohio.

OUTLINE OF THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM			SECOND TERM		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Agricultural Engineering	(51)	4	Dairying	(52)	3
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

Horticulture	(53) 4	Horticulture	(54) 4
Soils	(53) 3	Soils	(54) 3
Dairying	(53) 3	Agricultural Engineering	(52) 4
Rural Economics	(51) 4	Animal Husbandry	(54) 4
Farm Crops	(51) 4	Farm Crops	(52) 4
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate.

OUTLINE OF THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

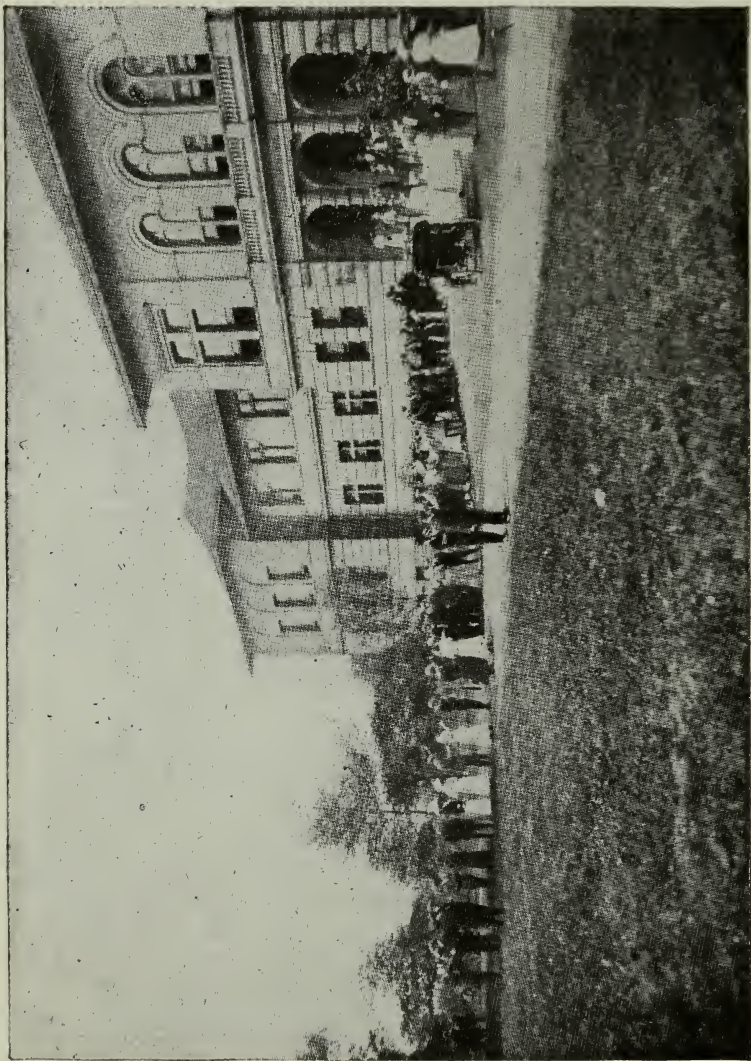
Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Horticulture	(67) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(65) 4	Horticulture	(64) 4
Dairying	(55) 3	Horticulture	(62) 4



STUDENTS WAITING TO REGISTER IN THE COLLEGE OF AGRICULTURE ON REGISTRATION DAY

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

AGRICULTURAL CHEMISTRY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost of materials for buildings, paints and painting, and concrete work in its various applications to the farm. (4) Drainage is considered from the

field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; concrete and its uses; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, steam engines and windmills.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey.

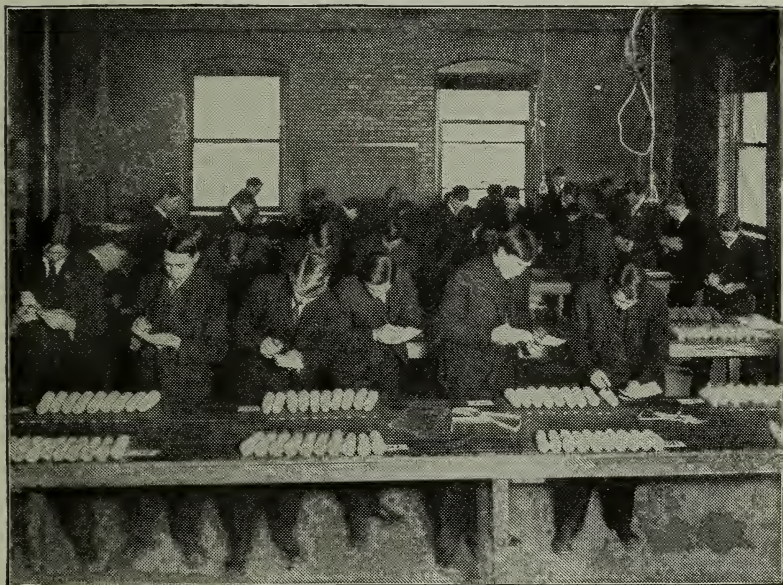
Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions.



CORN JUDGING

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

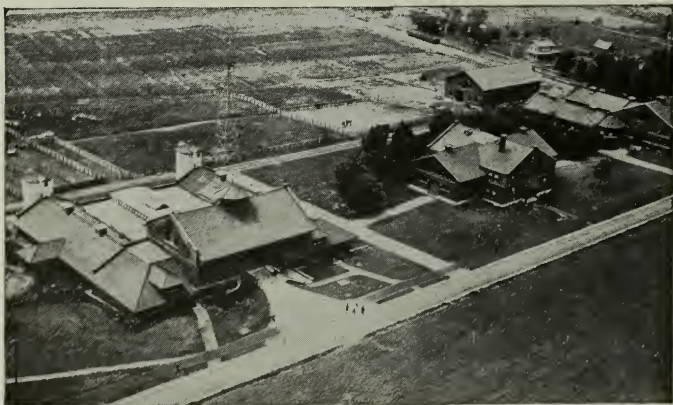
The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

POULTRY HUSBANDRY

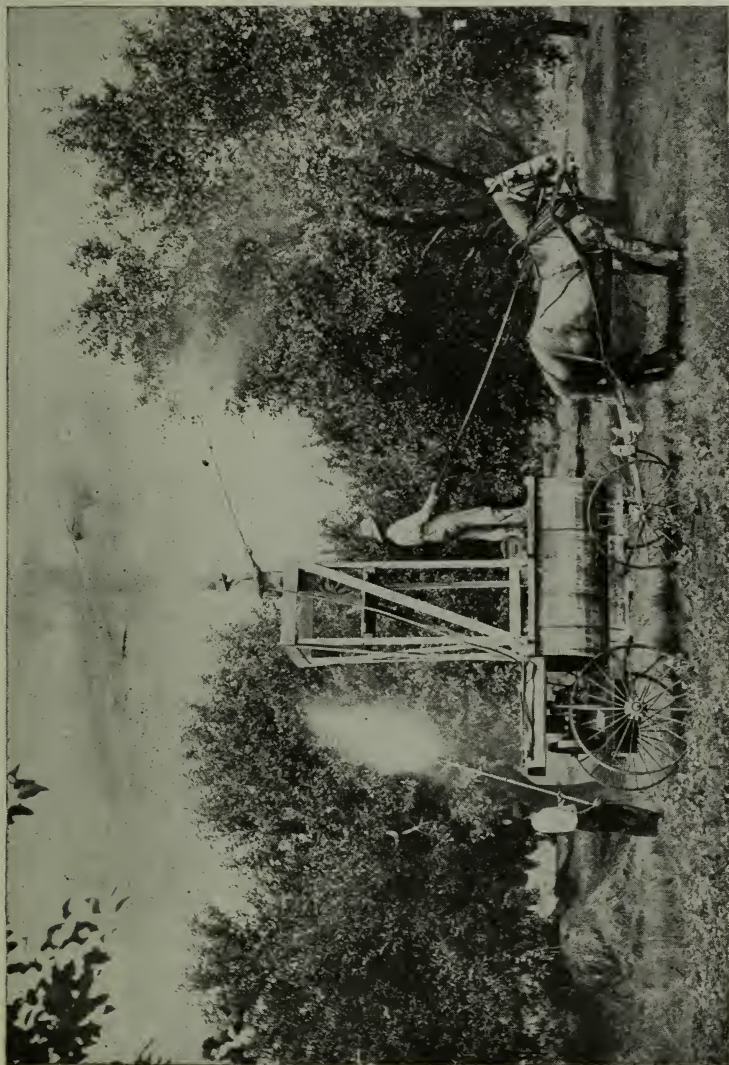
Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.



BIRD'S-EYE VIEW OF THE LIVE STOCK BUILDINGS



STUDENTS SPRAYING THE UNIVERSITY ORCHARD

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combating them.

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BOTANY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

DAIRYING

The department of Dairying offers the following lines of work: selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, butter-making, cheese-making, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. First year, Three-Year Course in Agriculture. Mr. Stoltz.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skimmilk, buttermilk and cream for butter-fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter-fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheese-making. Three credit hours. First term. Mr. Stoltz.

Lectures on cheese-making and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.



THE CENTRAL PART OF THE CAMPUS

56. Farm Butter-making. Three credit hours. Second term. Mr. Stoltz.

In the lecture room, the principles of butter-making including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical butter-making as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are included in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation.

FARM CROPS

51-52. Crop Production. Four credit hours. The year.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purposes.

HORTICULTURE AND FORESTRY

In this department, practical instruction is given in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orcharding; a thorough course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds.

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Pad-dock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.



A PRUNING CLASS

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, plotting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes such as windbreaks, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

MILITARY DRILL

In accordance with the Morrill Act of 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all students to drill two years unless excused by the

Military and Gymnasium Board. This work is under two commissioned officers of the regular army. The short course students are obliged to take military drill throughout the three years at the University.

PHYSICAL EDUCATION

Men

101-102. Physical Education. One credit hour. The year. Two hours each week during the first two years. Required of all students in this course. During the first year the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

RURAL ECONOMICS

The work in this department deals with the principles of accounting and their application to farm practices, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit; rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term. Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the use of simple carpenter tools. In forging is taught the use and care of the forge, fire, and



CORN FIELD

tools; practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

VETERINARY MEDICINE

Courses are given in this department which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration, horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio live stock.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combating the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of the College. Each student's work will be supervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.

The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.

The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering troughs, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying Out and Installing a Drainage System.

The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.

This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.

The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.

The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skimmilk.

2—Township Survey of Purebred Stock.

A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.

The keeping of records of the cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.

The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.

The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.

On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butter-fat Production.

Keeping a cost account of the milk and butter-fat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.

The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.

Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.

Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Butter-making at Home.

The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheese-making.

Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.

Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.

Planting seeds of forest trees; noting their germination and measuring growth.

3—Survey of Woodlots.

Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.

Measuring diameter growth of trees to learn annual increase, and time when growth is most rapid.

5—Census of Woodlot.

Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.

Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.

The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.

2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased, inferior fruit and reduce clusters to one fruit. Second, same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from $\frac{1}{4}$ to $\frac{1}{2}$ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yield, maturity, disease, cost of production and net returns.

RURAL ECONOMICS

1—A System of Farm Cost Accounting and Records.

This project consists of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.

A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.

A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.

A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.

The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.

A study of the social and business relations of the residents of a rural community.

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1920/21

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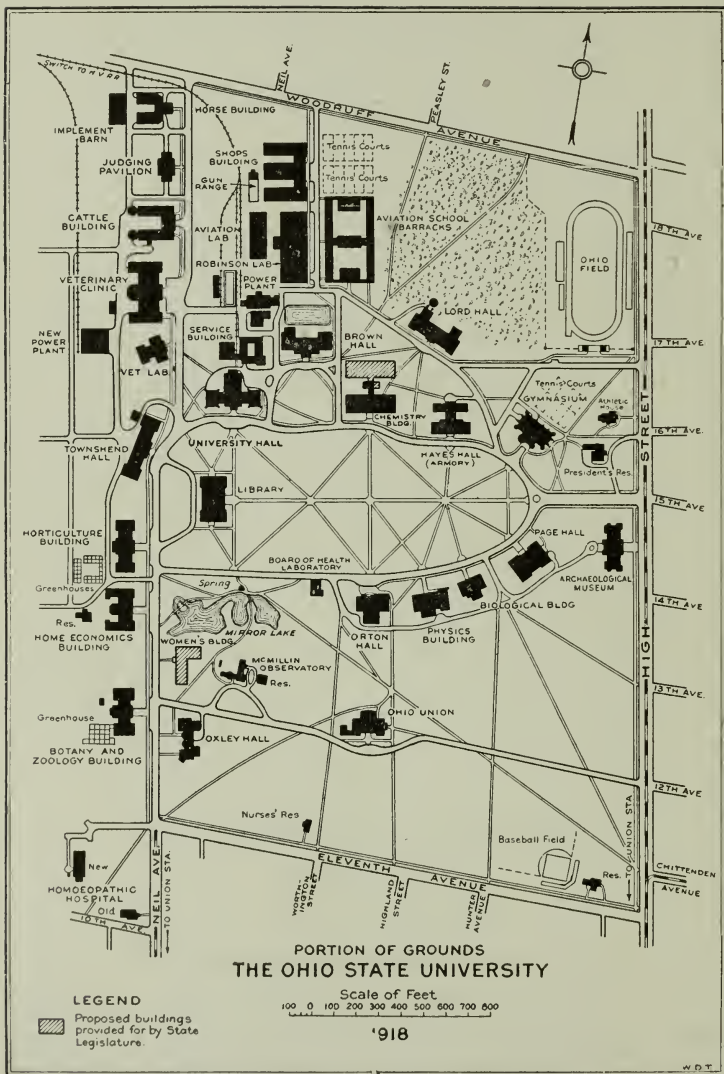
THREE-YEAR SHORT COURSES IN AGRICULTURE AND HORTICULTURE

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1920-1921

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CALENDAR 1920

JANUARY

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CALENDAR 1921

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UNIVERSITY CALENDAR

1920

- Summer Session, Monday, June 21 to Friday, August 13.
Entrance examinations, Tuesday to Saturday, 8 A. M., June 22 to 26.
Entrance examinations, Tuesday to Saturday, 8 A. M., September 7 to 11.
Registration Day—First Semester—Tuesday, September 14.
President's Annual Address, Wednesday, September 15, 11 A. M.
Latest date for registration of candidates for a degree at the Commencement in June, 1921, October 1.
Registration Day, Short Courses in Agriculture—First Term—Tuesday, October 19.
Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 10.
Thanksgiving recess begins November 24, 1 P. M., and ends November 30, 8 A. M.
Christmas recess begins Friday, December 17, 6 P. M.

1921

- Christmas recess ends Tuesday, January 4, 8 A. M.
Registration Day, Short Courses in Agriculture—Second Term—Tuesday, January 4.
Final examinations, Wednesday, January 26, to Thursday, February 3.
Farmers' Week, Monday, January 31 to Friday, February 4.
First semester ends Thursday, February 3, 6 P. M.

SECOND SEMESTER

- Registration Day—Second Semester—Tuesday, February 8.
University Day, Tuesday, February 22.
Close of Second Term, Short Courses in Agriculture, Friday, March 18.
Easter recess, Thursday noon, March 24 to Tuesday, March 29, 8 A. M.
Mid-semester reports to the Deans, Wednesday, April 13.
Competitive Drill—Cadet Regiment—Saturday, May 28.
Memorial Day, Monday, May 30.
Final examinations, Wednesday, June 1 to Thursday, June 9.
Commencement, Tuesday, June 14.
Summer Session, Monday, June 20 to Friday, August 12.
Entrance examinations, Tuesday, June 21 to Saturday, June 25, 8 A. M.

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises a graduate school and eleven colleges:

Graduate School	College of Education
College of Agriculture	College of Engineering
College of Arts, Philosophy and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
	College of Pharmacy
	College of Veterinary Medicine

COLLEGE OF AGRICULTURE

The work in the College of Agriculture is arranged to meet the needs of four distinct groups of students:

FOUR-YEAR CURRICULA. The four-year curricula consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA. The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

WINTER COURSES. The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE. Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

These courses replace the two-year courses in Agriculture and Horticulture and provide very largely the same work except that they extend over three years of five months each instead of two years of nine months each and are given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over seventeen years of age who have com-

pleted the work of the eighth grade and have had one year of practical experience on the farm.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail a blank application for admission. Such applications should be filled out and sent to the Entrance Board previous to the opening of the term.

DATE OF OPENING

These courses will open this year on October 19 and will close March 18, 1921. A vacation will be given at the Holiday season.

GENERAL INFORMATION

RESERVE OFFICERS' TRAINING CORPS

Under the law of Congress establishing the land grant colleges, it is required that instruction in Military Science and Tactics be included in the curricula. This instruction is given under the Defense Act of June 3rd, 1916, establishing in the University the Reserve Officers' Training Corps. Under normal conditions, six commissioned officers and eleven non-commissioned officers of the regular army are detailed by the War Department to take charge of this department.

Foreign students are not exempt from military training, nor is self-support an adequate reason for excusing a student from the requirement in Military Science.

The Reserve Officers' Training Corps is organized as a brigade consisting of two regiments of infantry, each composed of three battalions of four companies each, and one regiment of field artillery, composed of two battalions of three batteries each, a band of sixty pieces, and a trumpet corps. There are two companies of men from the students in the Three-Year Course in Agriculture. The total number of men under arms averages about three thousand.

The course of instruction is both practical and theoretical, and divided into basic and advanced courses in both infantry

and field artillery. One-third of the time is devoted to theoretical work in the class-room, and two-thirds of the time to practical work in the field.

Uniforms and equipment are furnished by the War Department. Students who are taking advanced courses in military science also receive forty cents per day as commutation of rations in addition to their uniforms.

The appointment of cadet officers is made usually from those who have served in the Military Department at least one year and as a reward for excellence in their work. No compensation is paid to officers who are completing their first two years of service in the Military Department, the only exception being those who have had the equivalent of the required two years in service elsewhere. The compensation awarded at the end of each year of satisfactory service is thirty dollars for lieutenants, forty dollars for captains, and proportional sums for officers of higher rank.

Service in the band is credited as military service, the positions being assigned after competitive try-out. Members of the band who have completed two years of service in the Military Department or its equivalent are paid at the rate of twenty dollars per year and receive instruction during the four winter months from a competent band master.

FEES AND EXPENSES

GENERAL CHARGES

All University fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until all fees have been paid. No student will have any privileges in the classes or laboratories until all fees and deposits are paid.

Since all fees are due and payable as a part of the student's registration, no person should come to the University for registration without money sufficient to cover all of his fees and deposits.

Matriculation Fee. Every student upon his first admission to the University is required to pay a matriculation fee of \$10.00. This fee is paid but once, and is in addition to other University fees and entitles the student to the privileges of membership in the University. (Effective June 1st, 1920.)

Non-Resident Fee. Every undergraduate student who is not a legal resident of the State of Ohio is required to pay a non-resident fee of \$25.00 each term of his residence in the University in addition to other University fees. The burden of registering under proper residence is placed upon the student. If there is any possible question of his right to legal residence, the matter should be brought to the attention of the Registrar and passed upon previous to registration or the payment of fees. Any student who registers improperly under this rule shall be required to pay not only the non-resident fee but shall be assessed a penalty of \$10.00. (Effective June 1st, 1920.)

No person shall be considered eligible to register in the University as a resident of the State of Ohio unless he has resided in the State twelve months next preceding the date of his proposed enrollment; and no person shall be considered to have gained a residence in this State for the purpose of registering in the University while he is a student in the University.

The residence of minors shall follow that of the legal guardian.

The residence of wives shall follow that of husbands.

Aliens who have taken out first citizenship papers and who have been residents of Ohio for twelve months next preceding the date of their enrollment in the University, shall be regarded as eligible for registration as residents of Ohio.

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses. The expenses the next two years will be practically the same:

Matriculation fee	\$ 10 00
Incidental fee	20 00
Ohio Union	2 00

Gymnasium locker	4 00
Deposit to cover laboratory materials.....	20 00
Books	20 00
Board (20 weeks at \$8.00 per week).....	160 00
Room rent (\$15.00 per month)	75 00
<hr/>	
Total	\$311 00

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from \$50.00 to \$75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about \$50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University farm, for which they are paid at the rate of 30 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. **The University does not guarantee or promise work to any one.** The matter of getting employment is left entirely to the student. One with initiative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State each year, and is good for three consecutive years in either the

short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

AWARDING OF SCHOLARSHIPS

These scholarships are awarded by the Farm Bureau in each county. The Farm Bureau is guided in its selection by the following regulations:

1. The scholarship in each county shall be given to a person who is eligible to admission to the Short Course in Agriculture or Horticulture of the College of Agriculture.
2. The scholarship shall only be given to those persons who have not had the educational advantages of a first or second grade high school.
3. The recipient must have lived at least one year on the farm before the scholarship can be received.
4. The recipient must be at least seventeen years of age at the time of the beginning of the first term of the Short Course in Agriculture.
5. The scholarship must be used the first year it becomes available.
6. The scholarships are open to both sexes.
7. The scholarships are not transferable.

VALUE OF SCHOLARSHIP

The free scholarship will cover the registration fees. Its value will be \$20.00 per year, or \$60.00 for three years.

RULES GOVERNING SCHOLARSHIPS

All rules governing the awarding of free scholarships as well as any changes in the same, will be made by the Farm Bureaus acting with the College of Agriculture.

For further particulars address either the President of the Farm Bureau in your county or the Dean of the College of Agriculture, Ohio State University, Columbus, Ohio.

OUTLINE OF THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Agricultural Engineering	(51) 4	Dairying	(52) 3
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Horticulture	(53) 4	Horticulture	(54) 4
Soils	(53) 3	Soils	(54) 3
Dairying	(53) 3	Agricultural Engineering	(52) 4
Rural Economics	(51) 4	Animal Husbandry	(54) 4
Farm Crops	(51) 4	Farm Crops	(52) 4
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate.

OUTLINE OF THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(53) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

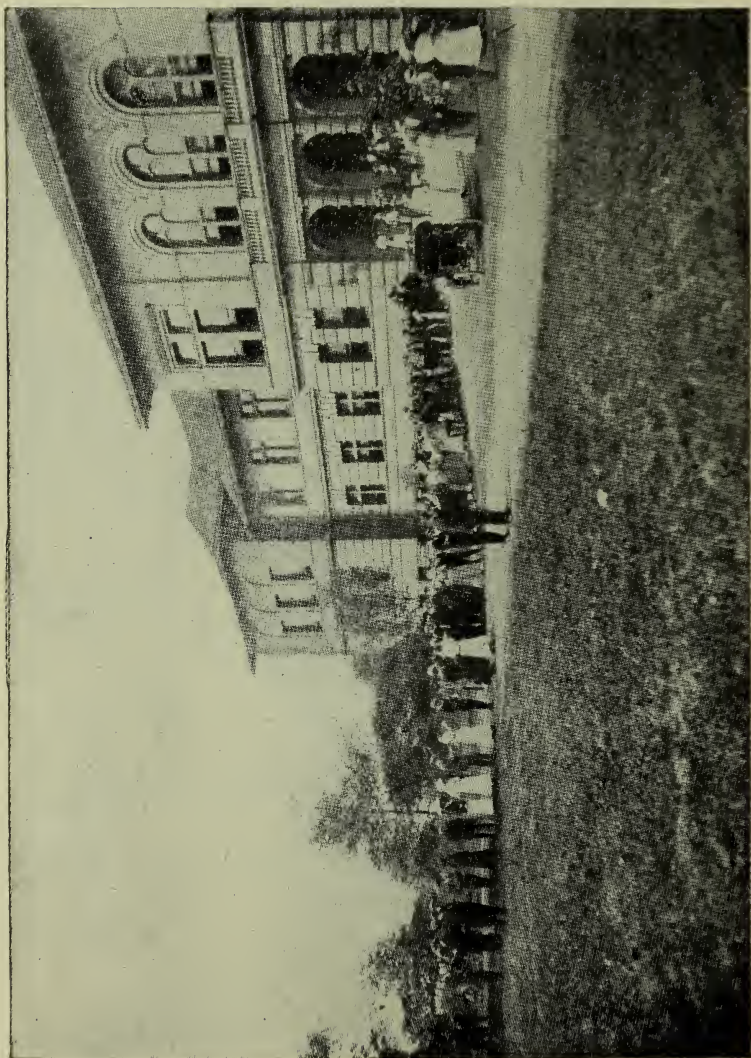
Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Horticulture	(67) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(63) 4		
Dairying	(55) 3		



STUDENTS WAITING TO REGISTER IN THE COLLEGE OF AGRICULTURE ON REGISTRATION DAY

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

AGRICULTURAL CHEMISTRY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost of materials for buildings, paints and painting, and concrete work in its various applications to the farm. (4) Drainage is considered from the field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; concrete and its uses; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, steam engines and windmills.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year, Three-Year Course in Agriculture. Mr. Coffey.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

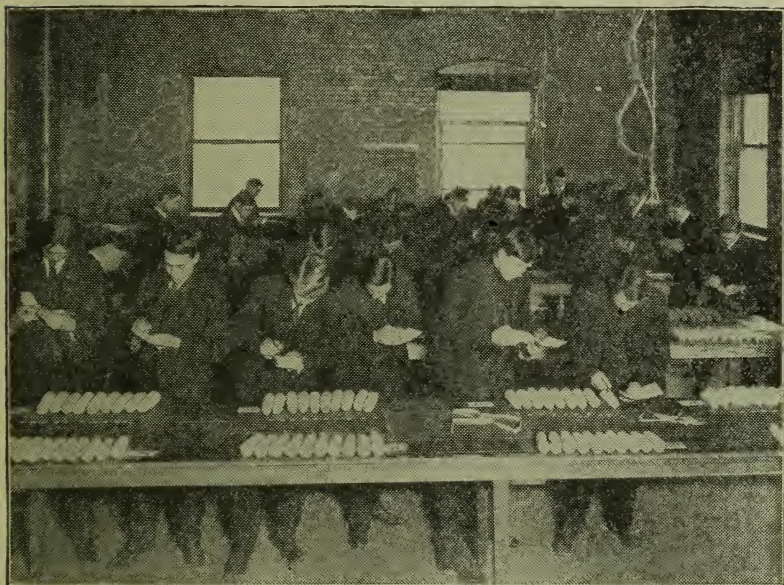
53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.



CORN JUDGING

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The number admitted to this course is limited to twenty. The permission of the instructor must be obtained.

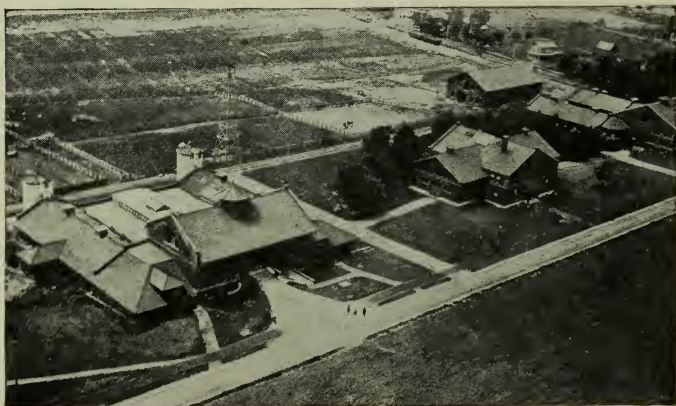
The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

POULTRY HUSBANDRY

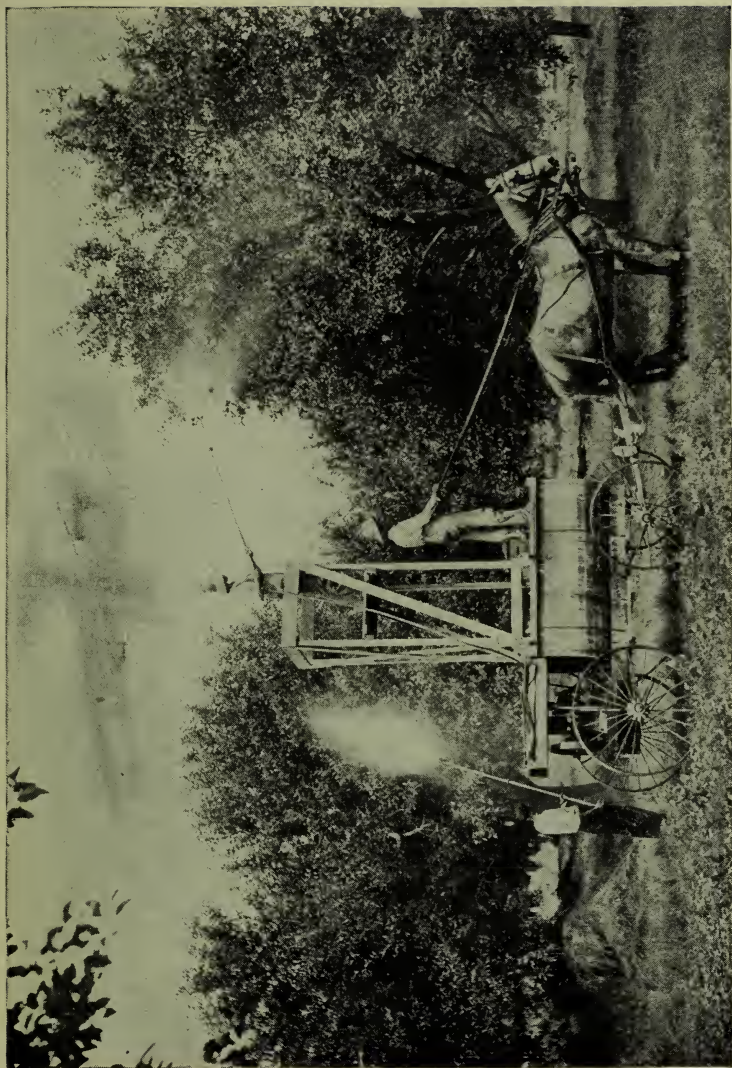
Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.



BIRD'S-EYE VIEW OF THE LIVE STOCK BUILDINGS



STUDENTS SPRAYING THE UNIVERSITY ORCHARD

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combating them.

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BOTANY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

DAIRYING

The department of Dairying offers the following lines of work: selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, butter-making, cheese-making, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. First year, Three-Year Course in Agriculture. Mr. Stoltz.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk; skimmilk, buttermilk and cream for butter-fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter-fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheese-making. Three credit hours. First term. Mr. Stoltz.

Lectures on cheese-making and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.



THE CENTRAL PART OF THE CAMPUS

56. Farm Butter-making. Three credit hours. Second term. Mr. Stoltz.

In the lecture room, the principles of butter-making including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical butter-making as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are included in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation.

FARM CROPS

51-52. Crop Production. Four credit hours. The year.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purposes.

HORTICULTURE AND FORESTRY

In this department, practical instruction is given in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orcharding; a thorough course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds.

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.



A PRUNING CLASS

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, plotting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes such as windbreaks, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

MILITARY SCIENCE AND TACTICS

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees therefore requires all male students, both special and regular, unless excused by the Military and Gymnasium Board, to complete the work in Military Science.

EITHER 101-102 OR 105-106 ARE REQUIRED OF ALL
FIRST-YEAR STUDENTS

101-102. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical

work. An elementary course including infantry drill, close and extended order, battle formations, formations for protection in hostile countries, etc., practice with gallery rifles at any open hour, daily during the winter months. Lecture, one hour each week, by the President.

105-106. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Field artillery drill, administration, ordnance and materiel. Lecture, one hour each week, by the President.

**EITHER 103-104 OR 107-108 ARE REQUIRED OF ALL
SECOND-YEAR STUDENTS**

103-104. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. A continuation of 101-102, with additional instruction in pistol practice, the bayonet and hand grenades.

107-108. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Artillery, motors, topography, and reconnaissance.

SUMMER CAMPS

As a part of the instruction of the Reserve Officers' Training Corps at the University, summer camps are conducted for this district. Infantry, at Camp Custer, five miles from Battle Creek, Michigan; Field Artillery, at Camp Knox, Kentucky, thirty-one miles from Louisville. One summer camp for the students of the first two years is held between the first and second school years. This camp is voluntary.

The camp for the advanced course is held between the third and fourth years and is required. For special reasons the advanced course camp may be postponed until after the fourth year is completed.

These camps are of six weeks duration and the work is mostly practical. In addition to military work, field sports and competitions are conducted. The training for Infantry includes firing on the target range with service rifles and using ball ammunition in combat. The training for Field Artillery includes firing field guns with service ammunition. The development of leadership and discipline are primary subjects of these camps.

The Government furnishes transportation to and from the camps. While in camp, clothing, subsistence, medical attention and entertainment are provided.

PHYSICAL EDUCATION

Men

101-102. Physical Education. One credit hour. The year. Two hours each week during the first two years. Required of all students in this course. During the first year the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

RURAL ECONOMICS

The work in this department deals with the principles of accounting and their application to farm practices, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit; rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

A study of the methods and costs of marketing farm products; the organization of the markets; cooperation as a factor in marketing and production; and proposed improvements in our marketing system.

54. Rural Community Life. Four credit hours. Second term. Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the use of simple carpenter tools. In forging is taught the use and care of the forge, fire, and



CORN FIELD

tools; practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

VETERINARY MEDICINE

Courses are given in this department which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration, horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio live stock.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combating the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of the College. Each student's work will be supervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.

The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.

The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering troughs, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying Out and Installing a Drainage System.

The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.

This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.

The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.

The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skim milk.

2—Township Survey of Purebred Stock.

A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.

The keeping of records of the cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.

The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.

The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.

On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butter-fat Production.

Keeping a cost account of the milk and butter-fat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.

The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.

Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.

Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Butter-making at Home.

The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheese-making.

Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.

Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.

Planting seeds of forest trees; noting their germination and measuring growth.

3—Survey of Woodlots.

Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.

Measuring diameter growth of trees to learn annual increase and time when growth is most rapid.

5—Census of Woodlot.

Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.

Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.

The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.

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2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased, inferior fruit and reduce clusters to one fruit. Second, same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from $\frac{1}{4}$ to $\frac{1}{2}$ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yield, maturity, disease, cost of production and net returns.

RURAL ECONOMICS

1—A System of Farm Cost Accounting and Records.

This project consists of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.

A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.

A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.

A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.

The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.

A study of the social and business relations of the residents of a rural community.

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